

NEBRASKA

DEPT. OF ENVIRONMENT AND ENERGY

MEMORANDUM

To: NDEE Files
Thru: Kara Valentine – Deputy Director of Air and Land Divisions, Dave Haldeman – Land Division Administrator
From: Dan LeMaistre - Waste Permit Section Supervisor
Date: 02/21/2020

RE: February 20, 2020, Meeting With Corteva Agrisciences on Discard Seed Corn

Attendees

Craig A. Rosenow	Regulatory Affairs Leader for Corteva
Brent Gaudreau	Regulatory Specialist for Corteva
Kara Valentine	NDEE, Air and Land Division Deputy Director
David Haldeman	NDEE, Land Division Administrator
Daniel LeMaistre	NDEE, Waste Permit Section Supervisor
Blayne Glissman	NDEE, Program Specialist

Mr. Rosenow and Mr. Gaudreau arrived at the NDEE office around 08:30 am on Thursday, January 20, 2020. Before beginning the meeting Mr. Rosenow indicated that he had reviewed the NDEE public records for the AltEn, LLC facility (AltEn, FID# 84069) and began asking Mr. Glissman questions regarding some of the records. Mr. Glissman indicated that he could not discuss AltEn but his supervisors may be able to provide additional input.

Once all attendees arrived we did introductions along with a brief discussion of the history and organization of Corteva. Mr. Rosenow explained that the Corteva, Dow, DuPont, and Pioneer/Mycogen were initially 15 to 20 different seed brands that eventually merged into three corporations under the Corteva umbrella.

Mr. LeMaistre then asked what happened when Discard Seed was returned. Mr. Rosenow explained the supply chain and that it varies depending on the seed type. Some products, such as soybeans, cannot be returned because the germination rates for the product are too low to have any value after a single season so Corteva considers them a waste. For others, such as treated seed corn, the distributor generally sells the farmer more seed than they expect to need for planting. At the end of the season, Corteva expects to get around 10% of the seed back after the planting season ends. With corn, the majority of the seed is resalable for up to 6 seasons but will vary due to multiple variables including: seed germination properties, yield data, technological improvements in coatings, etc.

Seed that the distributor takes back undergoes substantial evaluation, including testing to ensure that the returned seed can meet the guarantees that they offer. If the seed is still viable, it is reprocessed which can include: application of another insecticide or fungicide (overtreatment), changing tags, and re-bagging. Any seed that cannot be resold is called discard seed. Discard seed is generally treated seed corn that is no longer viable for planting, uses an outdated seed coating, does not perform as expected, is handled in such a way it is

not saleable (damaged packaging, spilled on the ground, etc.). Mr. Rosenow indicated that landfill disposal is the base option for discard seed; however, Corteva prefers to find alternative uses for the discard seed when possible. Currently, Corteva has identified two additional uses for the product, combustion in a cement kiln and feedstock at an ethanol plant. Mr. Rosenow indicated that when Corteva is considering entering into a contract, such as the agreement with AltEn, to use discard seed they ensure that the prospective user has obtained all applicable environmental permits were obtained prior to signing a contract. Mr. Rosenow then expressed some interest in AltEn's public record.

Mr. LeMaistre asked if composting had ever been evaluated and Mr. Rosenow indicated that he was uncertain that any treated seed corn manufacturer has seriously considered composting to be a viable disposal option for discard seed. Mr. Rosenow also stated that discard seed is a less preferred feedstock for kilns and combustion devices because it has to be debugged before use, which causes substantial issues for the end user. The ethanol producer using the seed corn appears to have fewer issues with debugging.

Ms. Valentine asked if Corteva sold the discard seed or paid for it to be removed. Mr. Rosenow indicated that in the case of the ethanol plant, to the best of his knowledge, Corteva does not sell the discard seed but does not pay to have it removed either (ethanol plant pays handling and transportation costs). Mr. Rosenow said his understanding of the situation is based on information from two years ago and he is not aware of the current situation; it could have changed based on market conditions. Ms. Valentine asked about other ethanol plants that use discard corn. Mr. Rosenow indicated there was one other plant that takes a very small amount of discard corn near Kansas City. Mr. Rosenow also indicated that any use of the discard seed is considered very carefully because they cannot "flip a switch" and change where the discard seed is sent; it is a large volume of material (for them) to handle without proper planning.

Mr. LeMaistre asked if there are any special procedures in place to deal with large volumes of water damaged seed. Mr. LeMaistre indicated this was an issue due to unusual flooding in 2019 and expected flooding in 2020. Mr. Rosenow stated that they do not have a specific protocol for water damaged seed and it would be handled like any other damaged product. He was unaware of any instances of Corteva being contacted for water damage issues.

Mr. Rosenow then requested some information regarding AltEn, LLC. Mr. Haldeman stated that the NDEE could not comment on AltEn LLC. Ms. Valentine and Mr. Haldeman briefly discussed NDEE records policy and indicated that public records will be available on the NDEE website as they become available. Mr. Rosenow indicated that at the conclusion of this meeting he intended to visit the AltEn, LLC facility. The NDEE did not respond to this comment.

Mr. LeMaistre then asked about washing the discard seed to remove the coating. Mr. Rosenow indicated that washing the seed was technically possible to some degree. Even though the chemicals used are water soluble, it would be difficult to do because a polymer is added to the mixture to fix the chemicals in place. To remove the coating it would require the use of certain chemicals, is energy intensive, degrades the quality/usefulness of the seed, and requires substantial infrastructure investments in water and wastewater facilities.

Mr. Rosenow shared information about a sunflower seed processing facility where they are trying to use a similar process to research possibilities to help reduce air emissions. Their effort remove the coating using water was not entirely successful and it may be difficult to perform on a commercial scale.

Mr. Glissman asked if the polymer came off naturally or if Mr. Rosenow had ever seen a colored dust plume while handling seed. Mr. Rosenow indicated that he had not seen a plume like that and did he know if that kind of dust contained the insecticide or fungicide the seed was treated with. The purpose of the polymer was to adhere the treatment to the seed and it should not come off easily.

Mr. Rosenow then indicated that the colored polymer seed coloring served two purposes; it binds the coatings to the seed and makes it easily identifiable to comply with regulations for seed use. This is done to ensure that using the product does not change predator populations so drastically to create a resistant predator population not susceptible to the chemical treatment or the trait modification thus making the crop very vulnerable.

Mr. LeMaistre asked if ultraviolet light had been considered for the degradation of the insecticides. Mr. Rosenow stated he wasn't sure the topic had been studied because the treated seed corn is not exposed to ultraviolet light during use; however, it seems unlikely to affect the coating because the polymer is inorganic in nature which would resist ultraviolet degradation.

Mr. LeMaistre then asked about labels, disposal suggestions and possible warning labels on those labels or tags. Mr. Rosenow explained that Corteva generally does not issue warnings on the labels for liability reasons.

Mr. Glissman asked about Discard Seed Soybeans and Sorghum. Mr. Rosenow clarified that no treated seed is taken back for soybeans since it is considered waste. Most soybean seed is not treated in the facility but is treated at the farm or at a dealer distributor. When asked about discard sorghum seed, Mr. Rosenow said he was unaware of that protocol. (Most sorghum seed is grown and processed in Texas).

Ms. Valentine asked about Corteva's corporate offices or headquarters. Mr. Rosenow explained that they had some corporate offices in Wilmington, Delaware. He stated that those were small offices with primarily a legal team. He discussed the original Pioneer Seed Company headquarters in Iowa and the Dow offices in Illinois and indicated that those were the primary offices.

The meeting ended around 10:30 am.

As he was leaving, Mr. Rosenow mentioned he didn't see AltEn's permit for the land application in NDEE's public file. Mr. Glissman shared that the authorization to apply a soil amendment came from the Department of Agriculture and it would be appropriate to contact them directly for that information.